

# PATENT SPECIFICATION

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## DRAWINGS ATTACHED

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## (54) A MOTOR VEHICLE HAVING A MULTI-PURPOSE PANEL

- (71) We, SOCIETE ANONYME AUTOMOBILES CITROEN, a French Body Corporate, of 117—167 quai Andre-Citroen, 75 Paris 15eme, France, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—
- The present invention relates to a motor vehicle within which is provided a deformable panel, which may be arranged in a variety of deformed positions so as to serve various purposes.
- The invention consists in a motor vehicle in the interior of which a deformable panel is secured to a first support means attached to or integral with the structure of the vehicle, the panel including an attachment device capable of cooperating with a second support means attached to or integral with the structure, arranged in a manner such that in the attached position, the panel forms a substantially horizontal screen, the attachment device also being capable of cooperating with a third support means attached to or integral with the structure arranged between said first support means and the part of said second support means furthest from said first support means, so that, when the attachment device is cooperating with said third support means, the panel is deformed to provide a generally concave upper load supporting and locating surface.
- The panel may include a fixing device by means of which one end of the panel is secured to the first support means, said fixing device, and the attachment device which is secured to a first support of the second support means when the panel is arranged as a generally horizontal screen, being advantageously coincident with two substantially parallel lines lying in a common, generally horizontal plane, the line associated with the attachment device being either approximately coincident with an edge at the opposite end

of the panel or spaced therefrom towards the fixing device.

A combination of these two arrangements is possible when there are at least two attachment devices which are securable on or over two associated supports of the second means, when the panel is arranged as a horizontal screen, one of the attachment devices being in the region of, and the other being spaced from said edge of the panel.

Moreover, one of the supports of the third support means may be arranged either adjacent or substantially in the plane of the two first support means, which plane is substantially horizontal, or below the plane of the said first and second support means.

In a first embodiment, the panel is formed by at least two substantially rigid flaps interconnected along their edges forming a joint, whilst the first of these flaps is mounted to pivot on the first support and one at least of the attachment devices is mounted on the flap which is furthest from the first flap when the panel is substantially flat.

The attachment device is preferably formed by ferrules, whilst each support is of a shape complementary to that of the said ferrule.

In a second embodiment, the panel is formed by a flexible curtain, whilst at least one of the attachment devices of this curtain is formed by a guide strip provided with end ferrules, each support being of a shape complementary to that of the said ferrules.

In the two embodiments, a bolt for locking the ferrules in relation to each support is arranged on at least one of these two members, i.e. the ferrules or on the supports. Advantageously, the bolt is formed by the ferrule itself mounted to slide over the panel and restorable to its starting position by a resilient member.

Moreover, the control of the sliding movement of the different ferrules may be effected by a common system of linked rods.

In order that the invention may be more clearly understood, reference will now be

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made to the accompanying drawings which show certain embodiments thereof by way of example, and in which:—

Figure 1 shows, schematically, an elevation of part of the interior of a vehicle fitted with a deformable panel, formed by rigid flaps;

Figure 2 shows a second position of the panel shown in Figure 1;

Figures 3 and 4 show sectional elevations, on an enlarged scale and in greater detail, of the interior of a vehicle provided with a deformable panel having rigid flaps showing third and fourth positions taken up by the panel;

Figure 5 shows a detail of the embodiment of an attachment device for attaching the panel to the structure of the vehicle,

Figure 6 shows a view, in perspective of the panel having rigid flaps, and shows a preferred arrangement for controlling the attachment of the panel to the structure;

Figure 7 shows an elevation of part of the interior of a vehicle fitted with a panel comprising a flexible curtain; and,

Figure 8 shows a detail of the arrangement shown on Figure 7.

Referring now to the drawings, two embodiments of deformable panel will now be described, one in which the panel is formed by rigid flaps, the other in which the panel is formed by a flexible sheet or curtain.

According to the first embodiment shown in Figures 1 to 6, the deformable panel is formed by rigid flaps.

The vehicle shown in the drawings of the type known as an "Estate Car", having a large interior space 1 arranged behind the back seat 2. A plurality of supports is attached to and within the sides of the structure or body 7 of the vehicle. In particular, first support means comprising a support 3 is arranged substantially on the upper part of the back of the seat 2, and second support means comprising first and second supports 22 and 21 respectively (Figure 1), are arranged substantially in the horizontal plane containing the support 3. Third support means are also provided, which include supports 23 and 24 (Figure 2) contained in a plane substantially parallel to the plane of the back of the seat 2; supports 25 and 26 (Figure 3) arranged below the plane of the supports 3, 21 and 22; and supports 27 and 28 which are arranged to retain the deformable panel in the shape of a V. As will be described hereinafter, the panel is provided with a fixing device for pivotally securing the forward end of the panel to the support 3, an attachment device adjacent the rear of the panel, for example approximately coincident with the rear edge thereof, selectively cooperable with the supports 22, 24, 26 or 28, and an attachment device intermediate the fixing device and former attachment device, selectively cooperable with the supports 21, 23, 25 and 27.

It will be understood that some of the preceding supports may be combined. For example, the supports 21 and 28, or 26 and 27, may be coincident. Moreover, in this embodiment wherein the deformable panel is formed by two rigid flaps 29 and 30 interconnected by transverse hinge means 31 along their edges 32, some of the supports are dispensable. For example, one of the two supports of each of the pairs 21 and 22, 23 and 24, 25 and 26, 27 and 28 of supports may be dispensable. It will be seen, however, from the reasons given hereafter, why the arrangement of the supports in pairs to be preferred. The panel may comprise more than two rigid flaps, in which event the attachment devices may be mounted on the flap 30, remote from the support 3 on which the flap 29 is hinged.

In Figure 1, the panel is located in a substantially flat and horizontal position. It therefore forms a screen, hiding any luggage space located therebelow and may be used as a storage shelf. The attachment devices carried by the panel, one of which is shown in front view in Figures 5 and 6, are inserted into at least one of the two second supports 21 and 22. Preferably, both supports 21 and 22 cooperate with the attachment devices to hold the flap 30 in satisfactory manner as an extension of the flap 29 and in the same plane, and to avoid possible vibration of the flap 30 which would be liable to occur if the support 21 was to be used alone, for example.

The arrangement of Figure 2 is self-explanatory. The flaps 29 and 30 being folded one against the other about the hinge means 31, in order to nest the flaps along the back of the seat 2, it is only necessary to introduce the attachment device of the flap 30 into one of the supports 23 or 24. However, even if the two supports 23 and 24 are used, the possible vibration which might occur is avoided by only retaining one single support. In this manner, the flaps 29 and 30 are positively held, and the panel in no way obstructs the space 1 in the interior behind the seat 2.

In Figure 3, the panel is shown by dotted lines folded against the seat 2, and held in this position with the cooperation of the supports 23 and 24. It will be seen that the panel comprises two rigid flaps 29 and 30 the upwardly directed surface of which is formed by upholstered pads 29a and 30a. The pads 29a and 30a are, moreover joined in the region of the hinge means 31, which joins the flaps 29 and 30, by an additional pad 33. The position of the supports 25 and 26 is such that, when the attachment devices, cooperate therewith, the flaps of the panel are mutually hinged to assume an upwardly concave or inclined V configuration rendering the panel suitable as an additional seat sufficient to accommodate a person 35 of small or average size. It will be noted, moreover, that

the flap 30 is, to this end, advantageously provided with one or more concealable feet 34 which rest on the floor 17 of the space 1 of the interior and, in this manner, relieve the supports 25 and 26, and the attachment devices which are inserted therein, of one part of the load corresponding to the weight of the person 35.

Figure 4 shows another position of the panel wherein the two flaps 29 and 30 are upwardly concave and form an upright which is substantially symmetrical about an upright plane extending transversely of the vehicle. In the hollow of this V, a load, for example, young child 37, can be placed, and thus the panel can be used as a cradle or bunk. To this end, fastenings 36 (rings for example) are arranged advantageously at the two ends of the V over the flaps 29 and 30 in order to be able to attach a baby harness. It will be apparent, however, that due to this V form, the flaps not only support, but also locate the child against unintentional forward or rearward movement during motion of the vehicle.

Figure 5 shows a detail of one support, the support 28 in this case, and of the associated attachment device which is inserted therein. The support 28 is formed by a member made of plastics material fixed over the structure 7 and provided with a cavity 38. The attachment device is formed by a retractable ferrule 39 mounted to slide, in the manner of a bolt, in a socket 40 attached to the flap 30. This ferrule 39 is held in its extended position beyond the socket, and is locked in the space in the position where it is inserted into the cavity 38, under the action of a spring 41. Finally, a handle 42 securely attached to the ferrule 39 enables the effect of the spring 41 to be overcome, for example by the user's fingers shown at 43. Naturally, the same device is provided to attach the flap 30 to the right and left-hand walls of the vehicle, i.e. on each side of the latter. Advantageously, the ferrule 39 is terminated by an end cover 44 made of a damping material which avoids the production of noises and vibration by the ferrule 39 on the base of the cavity 38. In Figure 6, the panel is shown separately, and this Figure also shows the fixing devices or ferrules 45 for pivotally mounting of the flap 29 in support 3. However, it will also be noted that the two ferrules 39 situated on the same side are linked by a rigid bar 46, a control handle 47 being mounted to pivot about a pin 48 on the flap 30 and connection means 49, such as a cable link the two bars 46 to the handle 47. In this manner, by moving the control handle from position 47 to position 47a, one can, by a single operation, cause the four ferrules 39 to return to their respective sockets, when, by the handles 42, it would have been necessary to effect four different operations.

In the second embodiment, the panel is flexible. The arrangement of the supports and ferrules previously described may still be used; it is also possible to use the supports in pairs with the attendant advantage of a good support of the panel. However, it is also possible to select the arrangement described with respect to Figure 7 and 8 wherein a plurality of supports 3, 4, 5 and 6 is attached to the structure 7 of the vehicle.

On Figure 8 is noted that one support, such as the support 3 which comprises the first support, is formed by two members 3a and 3b, symmetrical with respect to the longitudinal, median plane of the vehicle, in the example shown. The member 3a is itself formed by a rod 8 mounted to slide in a tube 9 secured to the structure 7 and held out of the tube by a spring 10 which bears on the base 9a of the tube 9 and on the end 8a of the rod 8. The other end 8b of the rod 8 comprises a recess 8c enabling the insertion of a shouldered ferrule 11a integral with the end 12a of a guide strip 12. A lug 8d limits the travel of the rod 8 in the tube 9.

The guide strip 12 is secured to the edge of a panel comprising a flexible curtain 13. A second ferrule 11b is integral with the second end 12b of the guide strip 12. Moreover, a second guide strip 14, provided with ferrules 15a and 15b at its ends 14a and 14b is secured to the edge opposite the first edges of the flexible curtain 13.

The curtain 13 is capable of being attached in a fixed or removable manner to the support 3 which is arranged at the level of the upper part of the back of the seat 2.

By means of its guide strip 14, used as an attachment device, the flexible curtain is capable of being attached to the support 6 which comprises a second support, arranged substantially at the same height as the support 3, but in such a manner that, when it occupies the position 19, the flexible curtain is practically horizontal. In this portion, the curtain may be used as a storage shelf and will act as a screen to conceal any baggage stored therebelow, the screening effect being enhanced if the support 6 is close to one of the walls 20, which is formed for example by the rear access door.

The flexible curtain may be attached to the support 4, which comprises a third support arranged substantially in the horizontal plane of the supports 3 and 6 by means of its guide strip 14, and at a distance from the support 3 which means that the curtain can be arranged so as to be upwardly concave, and substantially symmetrical about an upright plane extending transversely of the vehicle, at the position 15, and may be used as a hammock for a young child shown at 16. The support 4 is arranged between the supports 3 and 6, substantially in the horizontal plane of the said supports 3 and 6.

Finally, also by means of a guide strip 14, the flexible curtain can be attached to the support 5, which comprises a further third support, arranged substantially perpendicularly to the support 4, but below the plane of the supports 3 and 6, for example, half-way up the support 4 with respect to the interior floor 17. In this position 13 of the curtain, another concavity is formed so that the said curtain may thus be used as a seat for additional passengers as shown at 18.

It is well understood, moreover, that the telescopic supports are made to keep the space 1 free and may be provided with a device locking them in the retracted position, which renders them less cumbersome than in the projecting position. In the latter position, when the guide strips 12 and/or 14 have the ferrules at their ends inserted in the supports, the latter form sliding bolts locating the said ferrules which cannot easily be released therefrom.

The advantages of a curtain provided with such attachment means are clearly apparent. A vehicle incorporating such a curtain has many uses which are obtained by the multiplicity of the supports. Naturally, it is easy to conceive other uses which have not been described in the example chosen but which are no less part of the invention, such as using a plurality of supports carefully arranged.

Certain advantages are specific to the embodiment chosen. The flexible curtain is not costly and is easily concealable. On the other hand, the rigid flaps provided with upholstered pads have a better appearance than the flexible curtain and may have characteristics which ensure comfort superior to that of the flexible curtain.

Nevertheless, whatever embodiment employed, the panel may be dismantled very rapidly when desired and may be stored by folding back against the back of the back seat 2 in both cases, or by winding around the guide strip 14, in the case of the flexible curtain.

The advantage of arranging the ferrules 39 of the flap 30 of Figure 5 over the said flap 30 in place of arranging them over the said structure 7, is that a simpler embodiment of the assembly can be obtained than that shown in Figure 8, for example. The latter embodiment may, moreover, be used in certain cases where it is wished more particularly to facilitate the attachment as far as possible.

As will be apparent from the foregoing, the invention may be applied, with particular advantage, to the interior of a vehicle, such as an estate car, having a region which is usually employed to carry luggage, but which may alternatively be employed for other purposes, for example for locating additional passengers.

If desired, the space 1 need not be behind the rear seat 2.

#### WHAT WE CLAIM IS:—

1. A motor vehicle in the interior of which a deformable panel is secured to a first support means attached to or integral with the structure of the vehicle, the panel including an attachment device capable of cooperating with a second support means attached to or integral with the structure, arranged in a manner such that in the attached position, the panel forms a substantially horizontal screen, the attachment device also being capable of cooperating with a third support means attached to or integral with the structure arranged between said first support means and the part of said second support means furthest from said first support means, so that, when the attachment device is cooperating with said third support means, the panel is deformed to provide a generally concave upper load support and locating surface.

2. A vehicle as claimed in claim 1, wherein the panel includes a fixing device by means of which one end of the panel is secured to the first support means, said fixing device, and the attachment device which is secured to a first support of the second support means when the panel is arranged as a generally horizontal screen, being coincident with two substantially parallel lines lying in a common generally horizontal plane, the line associated with the attachment device being substantially coincident with an edge at the opposite end of the panel.

3. A vehicle as claimed in claim 2, wherein when the panel includes a further attachment device secured on or over the second support means when the panel is arranged as a generally horizontal screen, the further attachment device, when the panel is so arranged being coincident with a line disposed intermediate, substantially parallel to, and lying in substantially the same horizontal plane as, the lines of the fixing device and first mentioned attachment device.

4. A vehicle as claimed in claim 2 or 3, wherein the panel is located rearwardly of a seat of the vehicle, the fixing device being located at the forward transverse end of the panel, adjacent and approximately on the level of the upper edge of the seat back, and the first mentioned attachment device being located adjacent the rear transverse edge of the panel.

5. A vehicle as claimed in claim 4, wherein the panel, when the first mentioned attachment device is cooperating with the third support means, is deformed to form a rearwardly facing passenger seat.

6. A vehicle as claimed in claim 4, wherein the first mentioned attachment device is cooperable with the third support means to deform the panel to provide a concave upper

load support and locating surface which is substantially symmetrical about a generally upright plane extending transversely of the vehicle.

5 7. A vehicle as claimed in any one of the preceding claims, wherein one support of the third support means is arranged adjacent or substantially in the plane of the first and second supports, the said plane being substantially horizontal.

10 8. A vehicle as claimed in any one of the preceding claims, wherein one support of the third support means is arranged below the plane of the first and second supports.

15 9. A vehicle as claimed in any one of the preceding claims, wherein the panel is formed by at least two substantially rigid flaps, interconnected along their co-adjacent edges, a first one of said flaps being mounted to pivot over the first support and said first mentioned attachment device being mounted on the flap furthest from said first flap when the panel is substantially flat.

20 10. A vehicle as claimed in claim 8, wherein the attachment device comprises ferrules, each support having a shape complementary to that of said ferrules.

25 11. A vehicle as claimed in claim 10, wherein the ferrules form bolts which are slidable mounted on the panel, and are norm-

ally resiliently urged towards positions in which they extend into the supports.

12. A vehicle as claimed in claim 11, wherein displacement of the different ferrules is under the control of a common system of linked rods. 35

13. A vehicle as claimed in any of claims 1 to 8, wherein the panel comprises a flexible curtain, and at least one of the attachment devices therefore includes a guide strip provided with end ferrules, each support having a shape complementary to that of the ferrules. 40

14. A vehicle as claimed in claim 13, wherein the supports include sliding bolts which are cooperable with the ferrules. 45

15. A vehicle as claimed in claim 14, wherein the bolts are normally resiliently urged to positions in which they cooperate with the ferrules.

16. A vehicle substantially as hereinbefore described with reference to Figures 1 to 6 of the accompanying drawing. 50

17. A vehicle substantially as hereinbefore described with reference to Figures 7 and 8 of the accompanying drawings. 55

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COMPLETE SPECIFICATION

4 SHEETS

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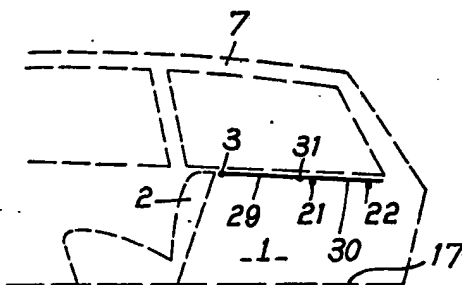


Fig. 1

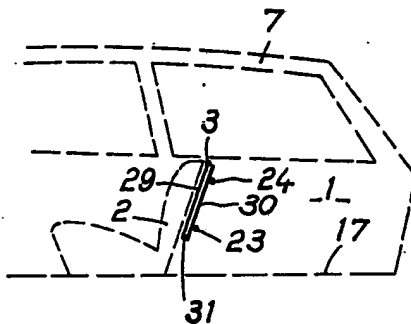


Fig. 2

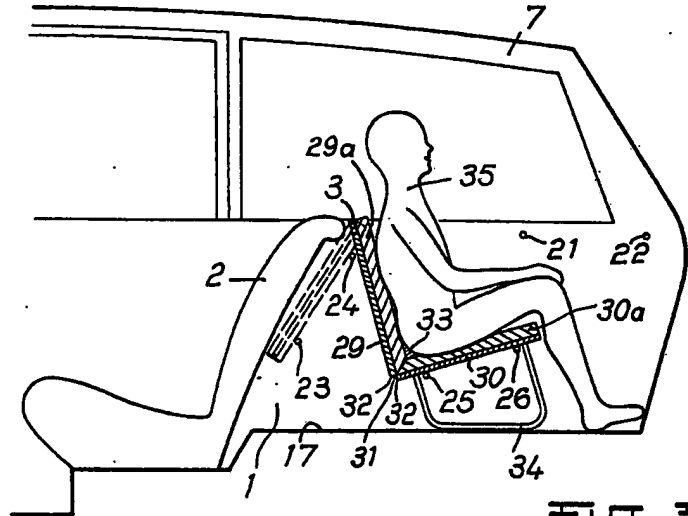


FIG. 3

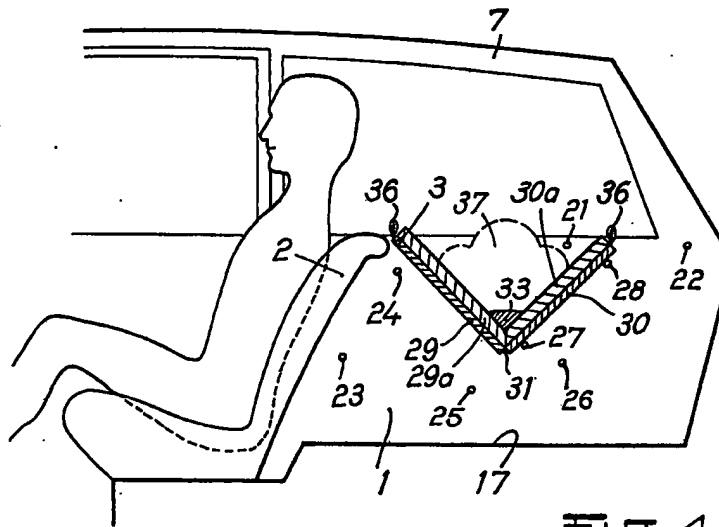
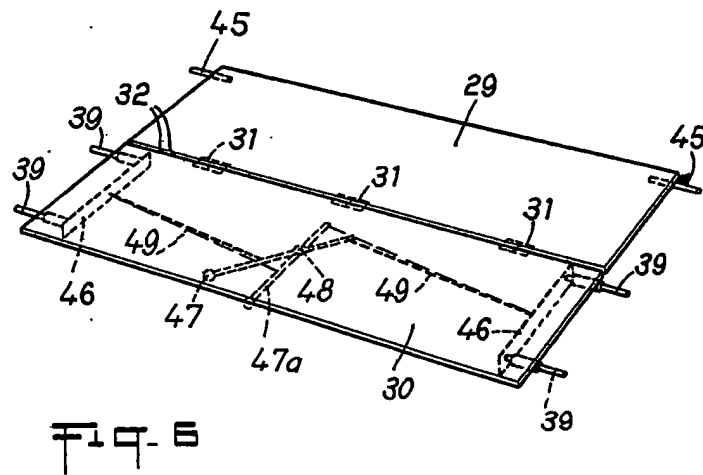
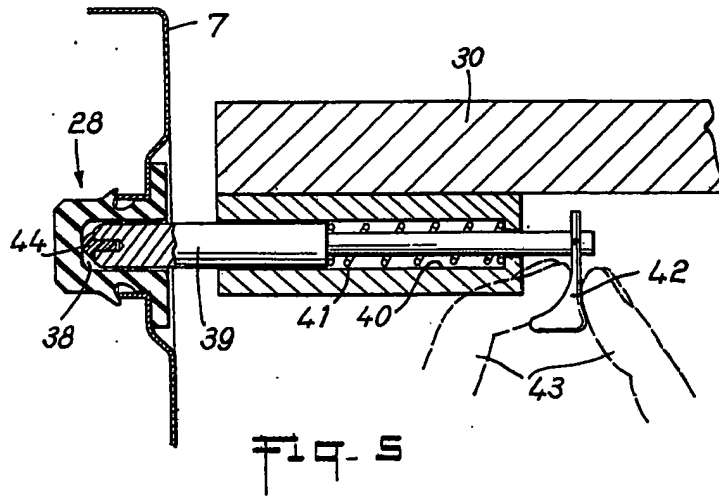
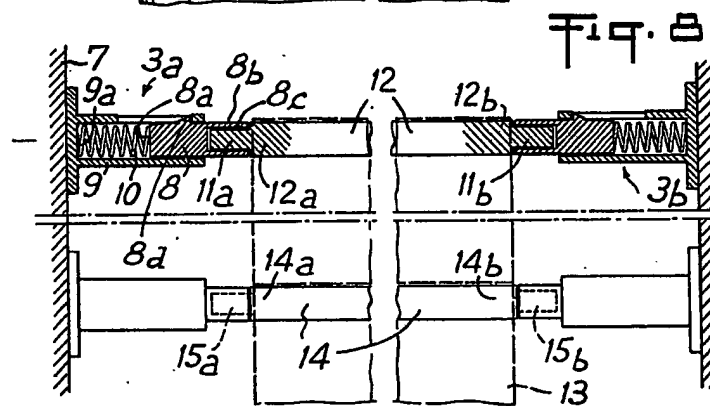
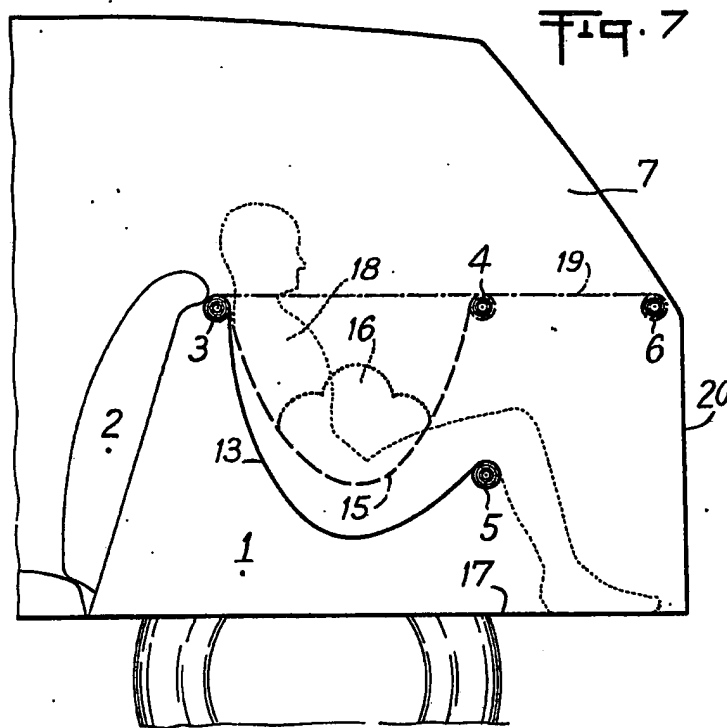


FIG. 4







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